DOCUMENT RESUME

ED 280 622 PS 016 501

AUTHOR Carlson, Charles R.; And Others
TITLE Using Propositional Sets to Enhance the Induction of Children's Emotions.
PUB DATE Apr 87
NOTE 14p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Baltimore, MD, April 23-26, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Ability; *Emotional Experience; *Heart Rate; *Preschool Children; Preschool Education; Puppetry; *Social Behavior
IDENTIFIERS *Generosity; *Happiness

ABSTRACT

The present study explored the development of intense positive emotion induction procedures through the use of propositional sets. Lang's bio-informational model of mental imagery suggested that by combining stimulus propositions with response propositions in the induction procedure children would experience more powerful emotions than under conditions where only stimulus propositions were employed. A total of 24 children, equally divided by sex, were randomly assigned to one of three experimental conditions: happy stimulus proposition induction (HS); happy stimulus and response proposition induction (HSR), and a neutral stimulus induction (N). The major study finding was that the use of stimulus and response propositions within emotion inductions influences children's subsequent behavior. Children in the HSR condition were more generous than were children in the other two conditions and showed increases in heart rate. Skin temperature increases and observer ratings of emotion were also in the predicted direction but did not reach acceptable levels of significance. Results are discussed in terms of the cognitive processing variables contributing to the formation and maintenance of emotional states in young children. (Author/RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED280622

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

USING PROPOSITIONAL SETS TO ENHANCE THE INDUCTION OF CHILDREN'S EMOTIONS

Charles R. Carlson, C. Thomas MacDonald,
Andrew L. Loizeaux, and Mark A. VenTrella

Department of Psychology
Wheaton College

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Charles R. Carlson
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Please address all correspondence to Charles R. Carlson, Ph.D., Department of Psychology, Wheaton College, Wheaton, IL 60187

PS 016501

Running Head: Inducing Children's Emotions

BEST COPY AVAILABLE

Abstract

The present study explored the development of intense positive emotion induction procedures through the use of propositional sets. Lang's bio-informational model of mental imagery suggested that by combining stimulus propositions with response propositions in the induction procedure children would experience more powerful emotions than under conditions where only stimulus propositions were employed. Twenty-four children, equally divided by sex, were randomly assigned to one of three experimental conditions: happy stimulus proposition induction (HS), happy stimulus and response proposition induction (HSR), and a neutral stimulus induction (N). It was found that children in the HSR condition were more generous and showed greater increases in heart rate than were children in the other two conditions. Skin temperature increases and observer ratings of emotion were also in the predicted direction but did not reach acceptable levels of significance. Results are discussed in terms of the cognitive processing variables contributing to the formation and maintenance of emotional states in young children.

The use of emotion induction procedures with young children has resulted in a growing data base describing the social cognitions and behaviors influenced by ongoing emotional states (Masters & Carlson, 1984). Generally, the emotion induction procedure involves the child remembering and thinking about a pleasant or unpleasant experience for a period of thirty-seconds. Following this time of reminiscing, the child is then exposed to dependent variables that are suited to the questions of interest. Since its introduction in the early 1970's, this basic research paradigm for inducing emotional states has considerably advanced our understanding of the consequences of emotional experience for children.

There has been, however, little empirical study of the procedures by which the emotional states themselves are created. Furthermore, until recently there was little means for standardizing the methods used from one research laboratory to another because of the reliance on induction procedures that required the presence of an adult experimenter. However, Carlson and Masters (1986) have developed procedures that rely on videotaped methods for inducing the emotional states. The use of such methods allows for close study of the variables influencing the effectiveness of emotion inductions without introducing extraneous variance that often results from several persons performing the inductions over the many weeks necessary for data collection.

Using interactive, videotaped emotion induction procedures, Carlson and Masters (1986) demonstrated that self-focused happiness protected children against the behavioral consequences of a negative experience. When a self-focused happy induction preceded an event leading to a

negative inequality in social comparison, children responded behaviorally as though the negative inequality had not occurred. While this finding may lead to useful clinical applications (i.e., emotion "inoculations" prior to aversive medical procedures), one of the other notable features of this study was the demonstration of effective manipulations of emotional states using a more standardized approach, namely videotape vignettes.

Unfortunately, there is the possibility that videotaped vignettes may dilute the intensity of the emotional experience engendered by the induction procedure. Self-generated thoughts may be more salient for the child and thus result in a stronger response during the period the child is asked to think about the emotion-evoking event. Currently, there are no data that speak to this issue, however. The present investigation was conducted to determine a means by which the strongest possible positive emotions could be developed using the videotaped emotion induction format. The induction of intense positive emotions would enable exploration of the influence of emotion on a broader range of social experience, as well as prepare a procedure suitable for general application of these induction techniques in a clinical setting. This latter goal is especially of interest given the findings that positive emotions protect or "inoculate" children from the negative consequences of aversive experiences (Carlson & Masters, 1986; Barden et al., 1981).

Lang (1977, 1979) has developed a bio-informational model of mental imagery that is based on the work of Pylyshyn (1973). The bio-informational model posits the coding of mental images as propositional statements. Propositional statements are best identified as word descriptions of information rather than pictures of information. When mental images are evoked, it is thought to be the result of the

manipulation of stored propositions, or verbal statements representing two fundamental classes: stimulus propositions and response propositions. Lang et al. (1980) has shown that when adults are given imaging instructions containing both stimulus (getting a present) and response (tearing off the paper and opening the box) cues, the intensity of the emotional response increases.

The present investigation was an attempt to employ the principles from Lang's bio-informational theory in the development of a means for inducing strong, positive emotional states in children. Although the bio-informational approach has been applied to adults, heretofore little evidence has been offered as to whether or not preschool children have the cognitive abilities necessary to process information in the way that Lang proposes. However, Flavell (1985) and others have noted that preschool children do have significant cognitive capacities with respect to constructive memory, so it was expected that children's conceptual understandings would allow them easily to follow and to process stimulus and response scripts for emotional experience.

In addition to exploring ways to enhance the intensity of videotaped emotion inductions, a second major purpose of the study then was to document the differential effects of propositional sets on the subsequent experience of emotion in young children. It was predicted that children experiencing both stimulus and response scripts in the emotion induction procedure would display behaviors consistent with more intense positive emotion than children who experienced only stimulus scripts. This hypothesis offered a straightforward test of Lang's bio-informational theory regarding the generation of emotions from memory.

Method

Twenty-four 5- and 6-year-old children equally divided by sex were assigned randomly to one of three experimental conditions: happy stimulus, happy stimulus and response, and a neutral emotion induction. Each emotion induction was presented via a videotape that provided children with the instructions to generate an image, the script of the things to be imagined, and the instruction to imagine oneself personally engaged in the event, e.g., "as if it were really happening".

The induction consisted of a videotaped puppet who conversed with the children. Pauses were placed in appropriate places so that children could respond in an interactive manner. Three videotape vignettes were developed, one for each of the emotional states. The tapes contained background music that was the same across conditions. The happy-stimulus transcript went as follows:

> Hello, my name is Leslie, What is your name? Today we are going to play a game together. You know, sometimes things happen to us that make us really happy, don't they? And, sometimes things happen to make us feel sad, isn't that right. And sometimes, things happen to us that make us feel just like sitting, know what I mean? Good. Now the game we're going to play is to make believe or pretend about being happy, ok? We can make believe we're happy by thinking about some happy thoughts. To make believe you need to really pretend that you are in the places that I tell you about. Alright? We are going to make believe about something that would make you very happy. Let's look at the magic dot and pretend with me that you and your Mom or Dad are going to the park for a birthday party where all your friends will be. You can see and hear them playing when you get near the park. When your friends see you, they call you to play with them. One of your very best

friends comes to meet you. They are all very happy too because birthday parties are so much fun. You get to have your favorite kind of ice cream with a big piece of your favorite birthday cake. After you've eaten the ice cream and cake, all the grown-ups call you and your friends together. They give each of you a present. You hear your name called and then you get a present in a big box with a red ribbon around it. Inside there is a special toy that makes you very happy. That's right, just pretend how happy you are and I'll tell you when to stop.

The script used for the happy-stimulus/response group was the same as the previous script except for as follows:

.....are going to the park for a birthday party where all your friends will be. You can see and hear them playing when you get near the park so you ask your Mom or Dad to hurry up because you can hardly wait to get there, you are so happy. When your friends see you, they call you to play with them. One of your very best friends comes to meet you, and you get so excited you giggle and run with your friend as fast as you can to where your other friends are playing. They are all very happy, too, because birthday parties are so much fun. You get to have your favorite kind of ice cream with a big piece of your favorite birthday cake. You take big bites of both because you are so hungry after playing with your friends and having so much fun. After you've eaten the ice cream and cake, all the grown-ups call you and your friends together. They give each of you a present. You hear your name called so you run over and reach up, then you get a present in a big box with a red ribbon around it and you take your present over to where your friends are and you tear off the ribbon and paper on your own present. You open the box and inside you find a special toy that makes you very happy, so you start to

play with it. That's right, just pretend how happy you are and I'll tell you when to stop.

The neutral script included the same introduction as the other two scripts, but contained statements reflecting a neutral emotional state as identified in previous studies on emotion (cf., Carlson & Masters, 1986). The neutral emotion induction portion of the script is provided below:

Now the game we're going to play is make believe or pretend about feeling just o.k. To make believe you need to really pretend that you are in the places I tell you about. Alright? Let us look at the magic dot and pretend with me that you are at home,, sitting in the living room. You are sitting in a comfortable chair and you really don't feel like moving. You can hear your mother in the kitchen getting dinner ready and you just want to relax and do nothing. That is right, pretend that you feel just like sitting without doing anything and I'll tell you when to stop.

Prior to the emotion induction, the heart rate and skin temperature (from the middle finger of the dominant hand) of the children were recorded using a Coulbourn modular physiograph. After the induction procedure, the physiological measures were again recorded.

The dependent variable of primary interest was generosity as operationalized by Rosenhan and colleagues (Rosenhan, Underwood & Moore, 1974). This variable has been shown to be quite sensitive to ongoing emotional states (cf., Moore et al., 1973; Carlson & Masters, 1986). Following the emotion induction, the children were given the opportunity to share pennies with other children, as in other studies that have used this measure of generosity. The children's facial expressions before and after the induction were also rated for intensity of emotion expression on seven emotion categories by a parent who accompanied them to the laboratory.

These categories included happiness, sadness, surprise, anger, fear, shyness, and disgust. Parent ratings for each category were made on a scale ranging from "1" (least) to "9" (most).

Results

Generosity. The happy stimulus and response (HS/R) group was significantly more generous than either the happy stimulus (HS) or neutral (N) groups, $F(2,21)=4.45$, $p< .03$; X's = 13.13, 7.63, and 5.25 pennies respectively.

Heart rate. Heart rate change was determined by the difference between the heart rate taken at baseline and again after the emotion induction procedure was completed. The HS/R group was the only group to have an increase in heart rate (X = +4.75 beats per minute) while the HS and N groups had decreases of 9.75 and 7.00 beats per minutes, respectively, $F(2,21)=6.16$, $p< .01$.

Skin temperature. Skin temperature change was also determined by the difference between the temperature taken at baseline and again after the emotion induction procedure was completed. The differences in the average change scores for the HS/R (+1.25 ^{0} C), HS (+0.69^0 C), and N (+0.90 ^{0}C) approached a level of statistical significance, $F(2,21)=3.13$, $p<.07$.

Parent ratings. Parent ratings for happiness prior to and following the emotion induction were converted to change scores reflecting the increase or decrease in the intensity of the emotion expressed. The average change scores were in the predicted direction (HS/R= +.75; HS= +.13; and N= -.13); however, the results were not found to be significant, $F(2,21)=0.49$, $p<.25$. Parent change scores in the other emotion categories were not found to differ across conditions or after the emotion induction experience.

Discussion

The major finding of this study is that the use of stimulus and response propositions within emotion inductions influences children's subsequent behaviors. These effects include physiological processes, as well as socially-valued actions such as generosity. In accord with predictions derived from Lang's bioinformational theory, children who imagined events using response propositions as well as stimulus propositions, were significantly more generous and showed greater heart rate changes than were children who imagined happy events with stimulus propositions only, or children who imagined a neutral event. In accord with previous findings concerning the effects of emotion (Borden et al., 1981; Carlson & Masters, 1986), it is suggested that children in the stimulus-response condition were experiencing more happiness than the children in the stimulus condition alone. Even though parent ratings of emotional expression do not support this conclusion, such ratings may not have accurately reflected the intensity of the ongoing emotion because of systematic biases in those ratings. For instance, Felleman et al. (1983) have noted that adults have a high base rate for the use of the label, happy. Such useage could systematically influence intensity ratings (e.g., everyone is always happy, especially "my child") for happiness among parents who have not been systematically trained in facial expression rating and minimize group differences for ratings of happiness across conditions.

Ekman et al. (1983) demonstrated that emotional expressions could be reliably distinguished on the basis of physiological activity. Specifically, persons who were happy showed increased heart rates, as well as increased peripheral skin temperature. The results of the present study with children were consistent with Ekman et al.'s findings with adults; such findings lend support to efforts aimed at identifying specific physiological indices of

emotional expression, even with very young children. More importantly, they point out the importance of employing multi-modal assessment procedures for the identification of emotional expressions.

Since emotions appear to be reliably generated using propositional sets in five- and six-year-old children, not only is it necessary to attend to the setting conditions (i.e., stimulus or response sets), but it is also important to note what this tells us about the cognitive capabilities of children at this age level. Emotions are not necessarily encoded as unitary experiences but rather may be stored as discrete propositional units that can be combined in a variety of ways. This raises the question of what and how many response propositions would be necessary to create emotional experience. While the present results show clearly that adding response propositions to the induction procedure will enhance the emotional response over and above using stimulus propositions alone, it is not clear whether or not the number of response or stimulus propositions is a factor. Future studies might well be aimed at determining whether or not there is a critical number of propositional sets necessary for experiencing emotional states, and whether intensity is influenced by either too few or too many of such sets.

One practical implication of the present investigation is the potential for children to generate more intense emotions when they are provided with prepared scripts. This reduces the inducer's dependence on the child's ability to recall his/her own thoughts and opens the possibility for inducing emotional states under less than ideal conditions, such as in medical settings. Given the potential inoculation effects of positive emotional states, the authors are indeed investigating the usefulness of this procedure in an immunization clinic. In such situations, children are

often quite uncommunicative with unfamiliar health professionals; their use of a standard emotion induction might very well serve as a means to reduce the aversive nature of childhood immunizations or other painful medical procedures.

Although the present findings were encouraging, there were several shortcomings to this study that bear discussion. The failure to discriminate between the intensity of children's emotional expressions suggests the importance of using independent raters of facial expression (cf., Carlson & Masters, 1986). It is also not clear whether or not the most intense emotion inductions have been obtained using these methods. Replication of these findings, as well as confirmation from other physiological measures (i.e., skin temperature), would lend further support to the present results. Thus, this study opens the door for a series of studies exploring the importance of propositional sets in the induction of emotions in young children.

References

Barden, R. C., Garber, J., Duncan, S. W., & Masters, J. C. (1981). Cumulative effects of induced affective states in children: Accentuation, inoculation, and remediation. Journal of Personality and Social Psychology, 40, 750-760.

Carlson, C. R. & Masters, J. C. (In press). Inoculation by emotion: Effects of positive emotional states on children's reactions to social comparison. Developmental Psychology.

Ekman, P., Levenson, R. W., & Friesen, W. V. (1983). Autonomic nervous system activity distinguishes among emotions. Science, 221, 1208-1210.

Lang, P. J. (1977). Imagery in therapy: An information processing analysis of fear. Behavior Therapy, 92, 276-306.

Lang, P. J. (1979). A bio-informational theory of emotion imagery. Psychophysiology, 16, 495-512.

Lang, P. J., Kozak, M. J., Miller, G. A., Levin, D., & McLean, A. (1980). Emotional imagery: conceptual structure and pattern of somato-visceral response. Psychophysiology, 17, 179-192.

Masters, J. C. & Carlson, C. R. (1984). Children and adults' understanding of emotion. In C. Izard, R. Zajonc, and J. Kagan (Eds.), Emotion, Cognition and Behavior. New York: Cambridge.

Moore, B. S., Underwood, B., & Rosenhan, D. L. (1973). Affect and altruism. Developmental Psychology, 8, 99-104.

Pylyshyn, Z. W. (1973). the role of competence theories in cognitive psychology. Journal of Psycholinguistic Review, 2, 21-50.

Rosenhan, D. L., Underwood, B., & Moore, B. (1974). Affect moderates self-gratification and altruism. Journal of Personality and Social Psychology, 30, 546-552.